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Module 02 Contd.

Box Plots for Grouped Data

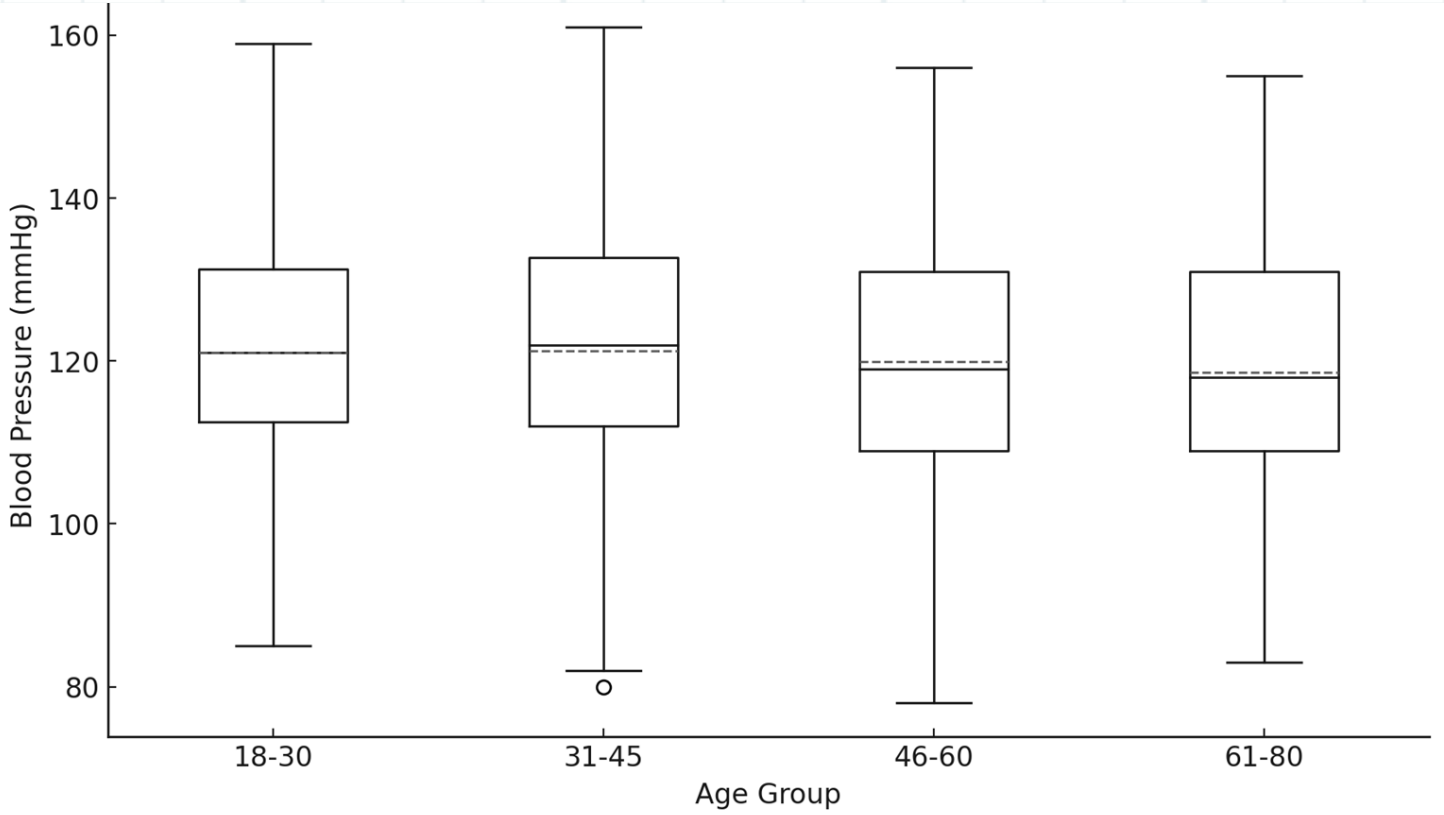
Visualization of Continuous Data

Box Plot

Box plots are an excellent tool for visualizing and summarizing the distribution of continuous data.

They provide a quick snapshot of the data's spread, central tendency, and variability.

A **box plot (also called a box-and-whisker plot)** summarizes data by showing its **quartiles, spread, and potential outliers**.



Visualization of Continuous Data

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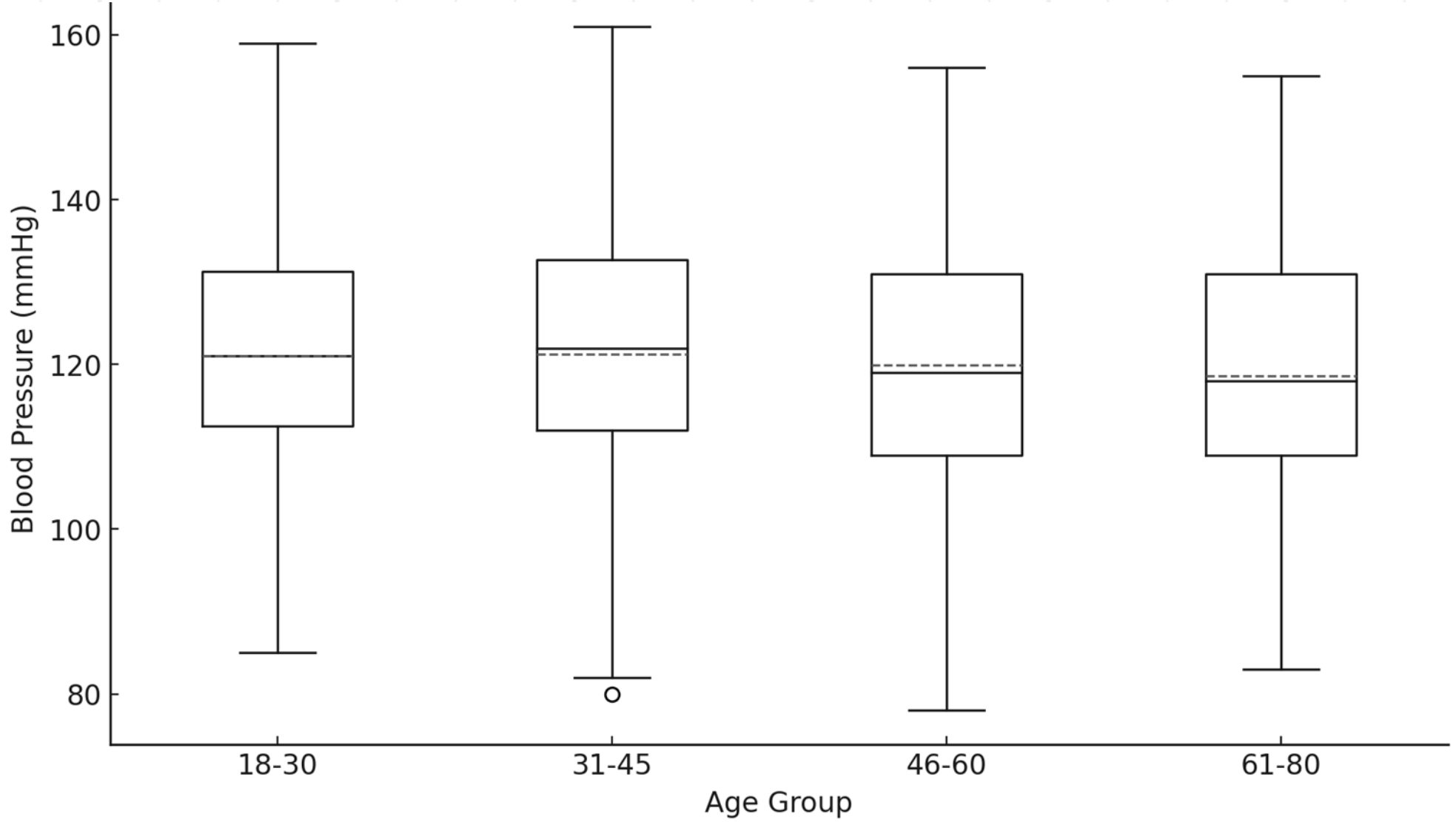
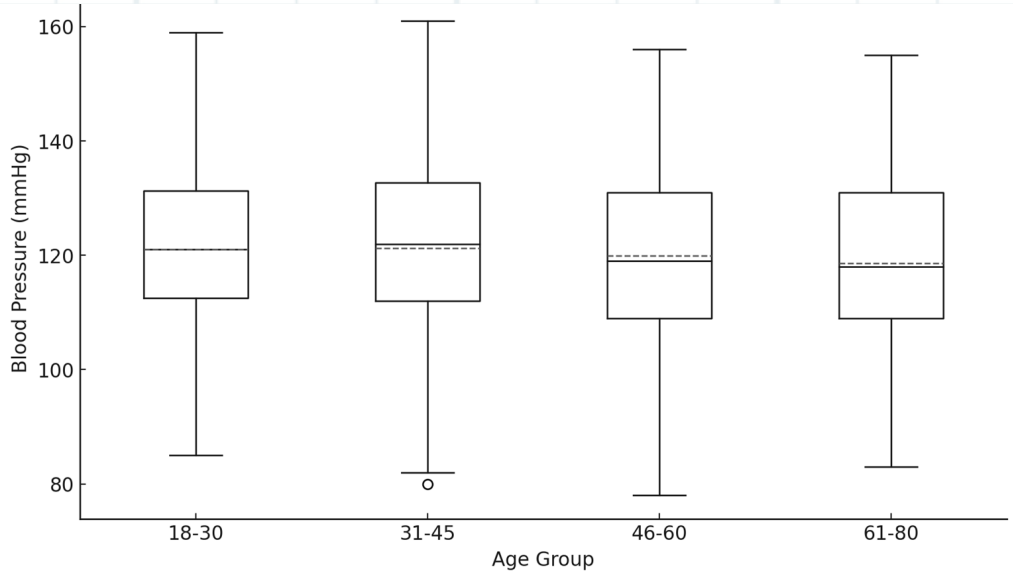
Box Plot



Box Plot

Boxes and Quartiles

- The box represents the **interquartile** range (IQR)—the middle 50%
- The solid line inside the box indicates the median (50th percentile)
- The ends of the box represent the 25th percentile (Q1) and 75th percentile (Q3).

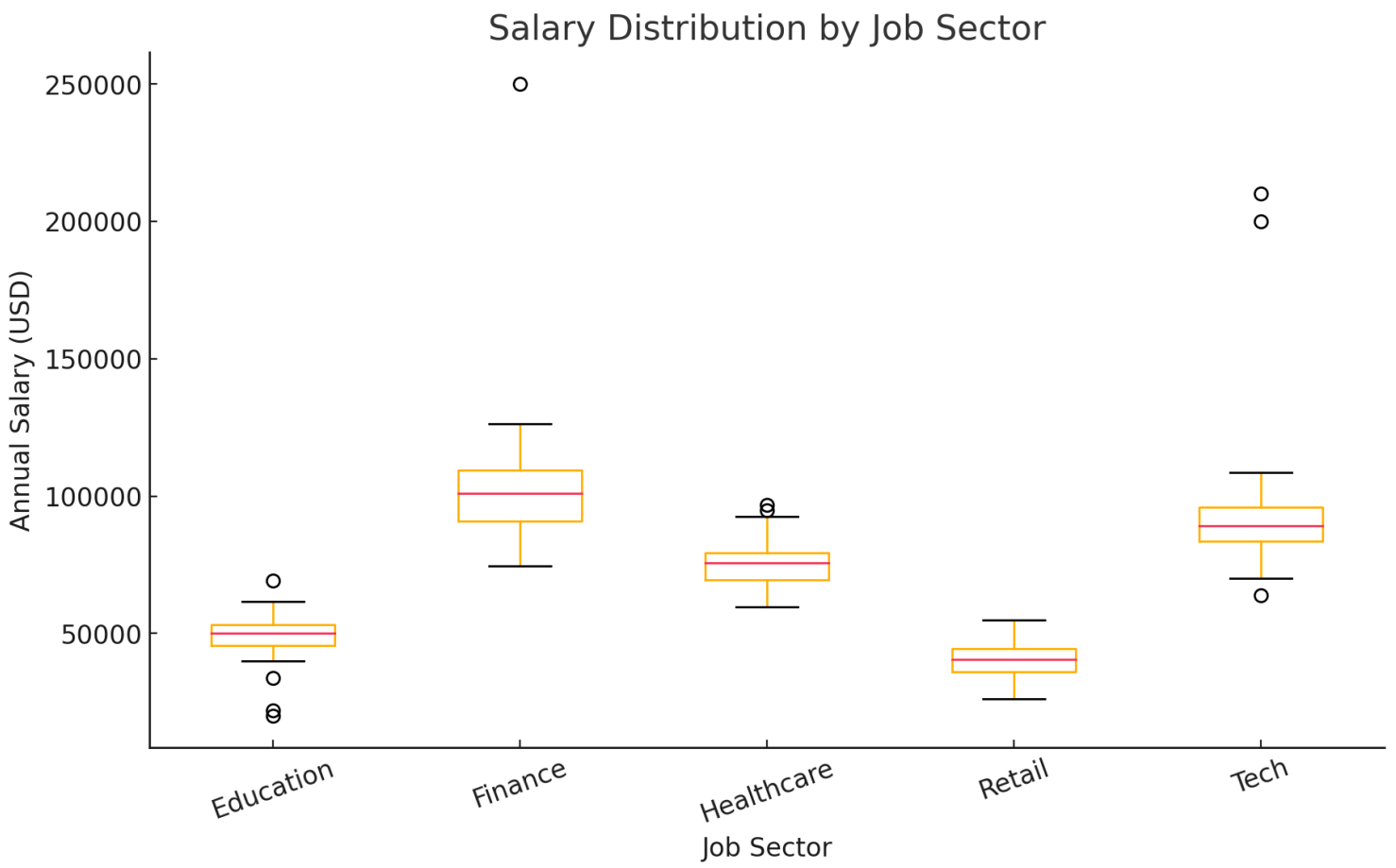


Whiskers: The whiskers extend from the box to show the range of values within 1.5 times the IQR from the quartiles. Values beyond the whiskers are considered potential outliers.

Mean Line: The mean (average) is shown as a dashed horizontal line inside the box, helping compare it with the median for symmetry.

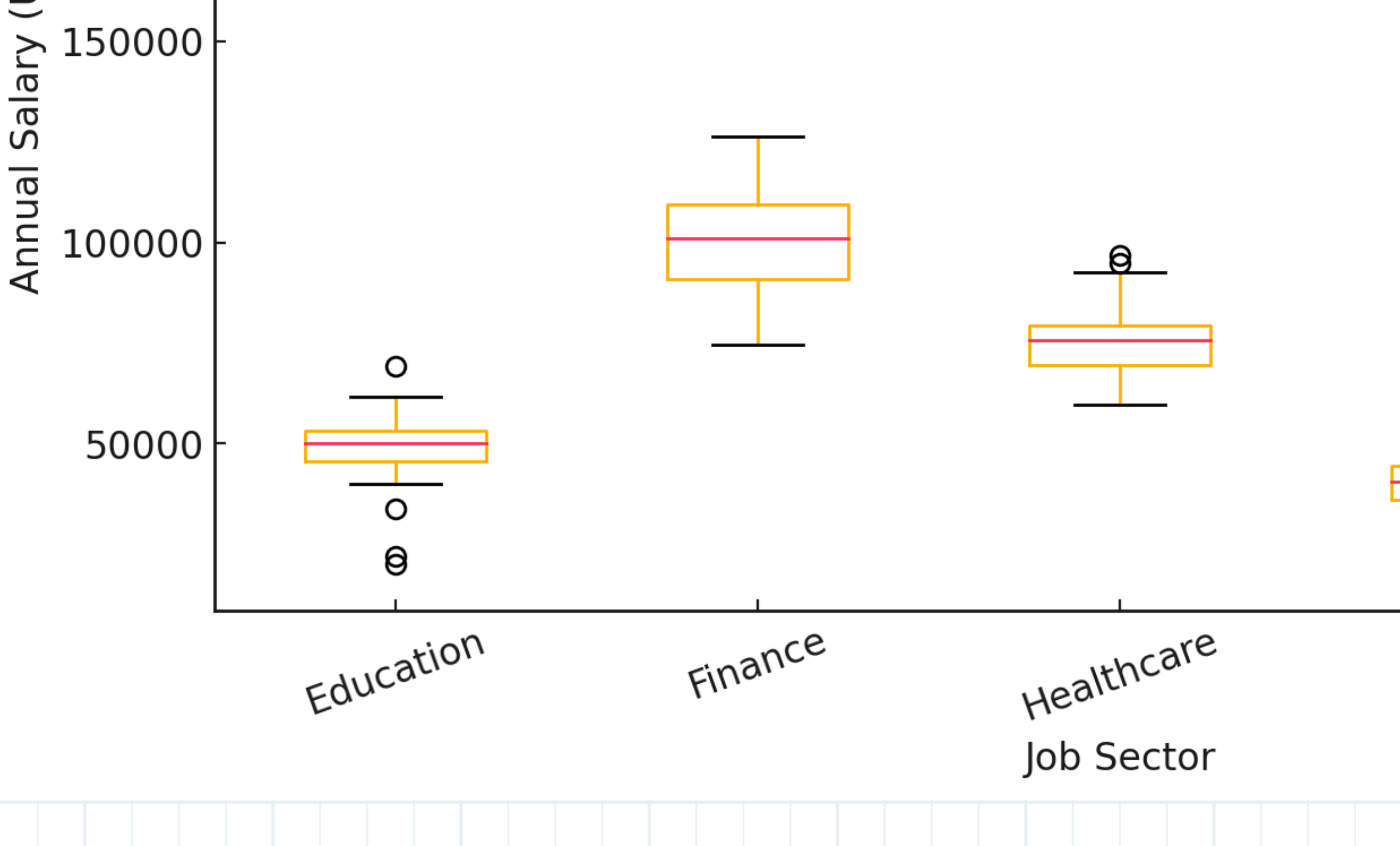
Outliers: Dots beyond the whiskers indicate outliers, which are data points that fall outside the expected range. These might represent unusual or extreme blood pressure values for the given age group.

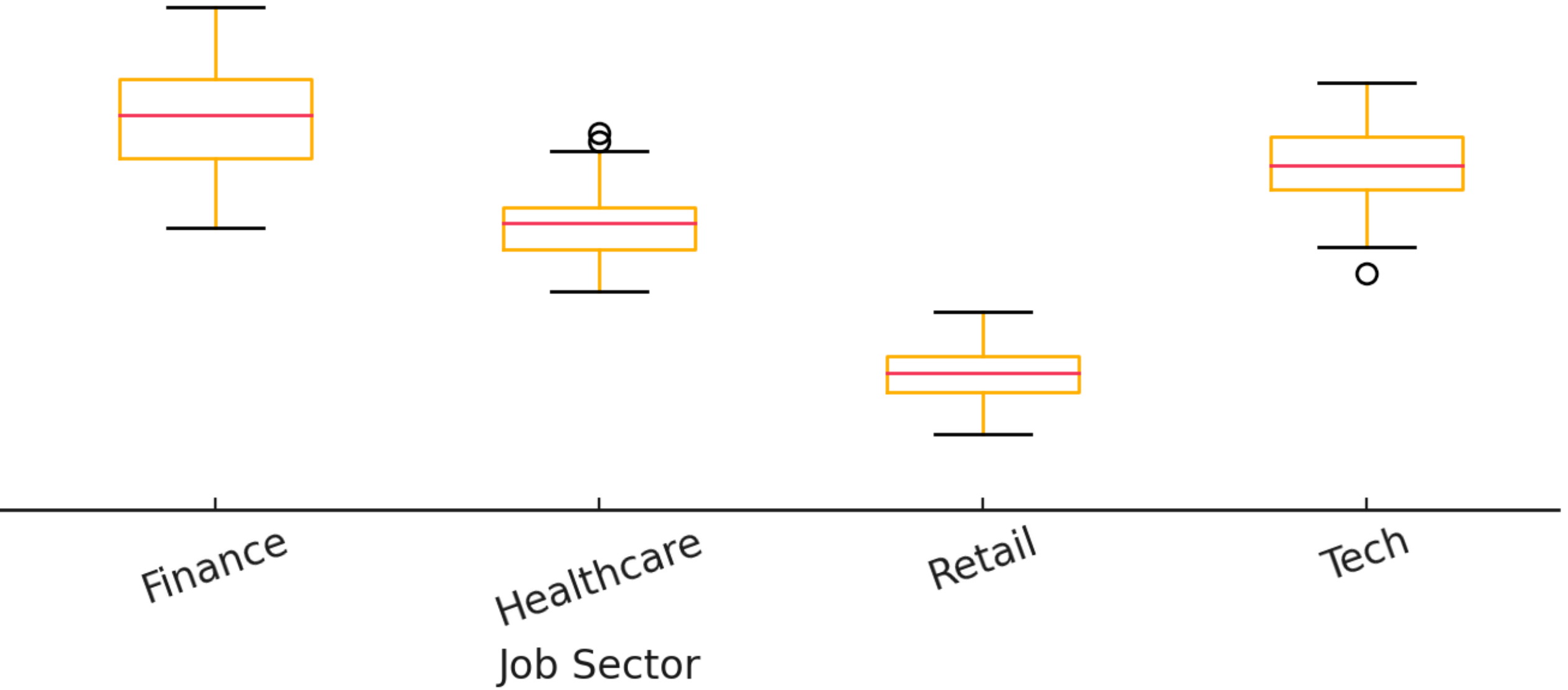
Example

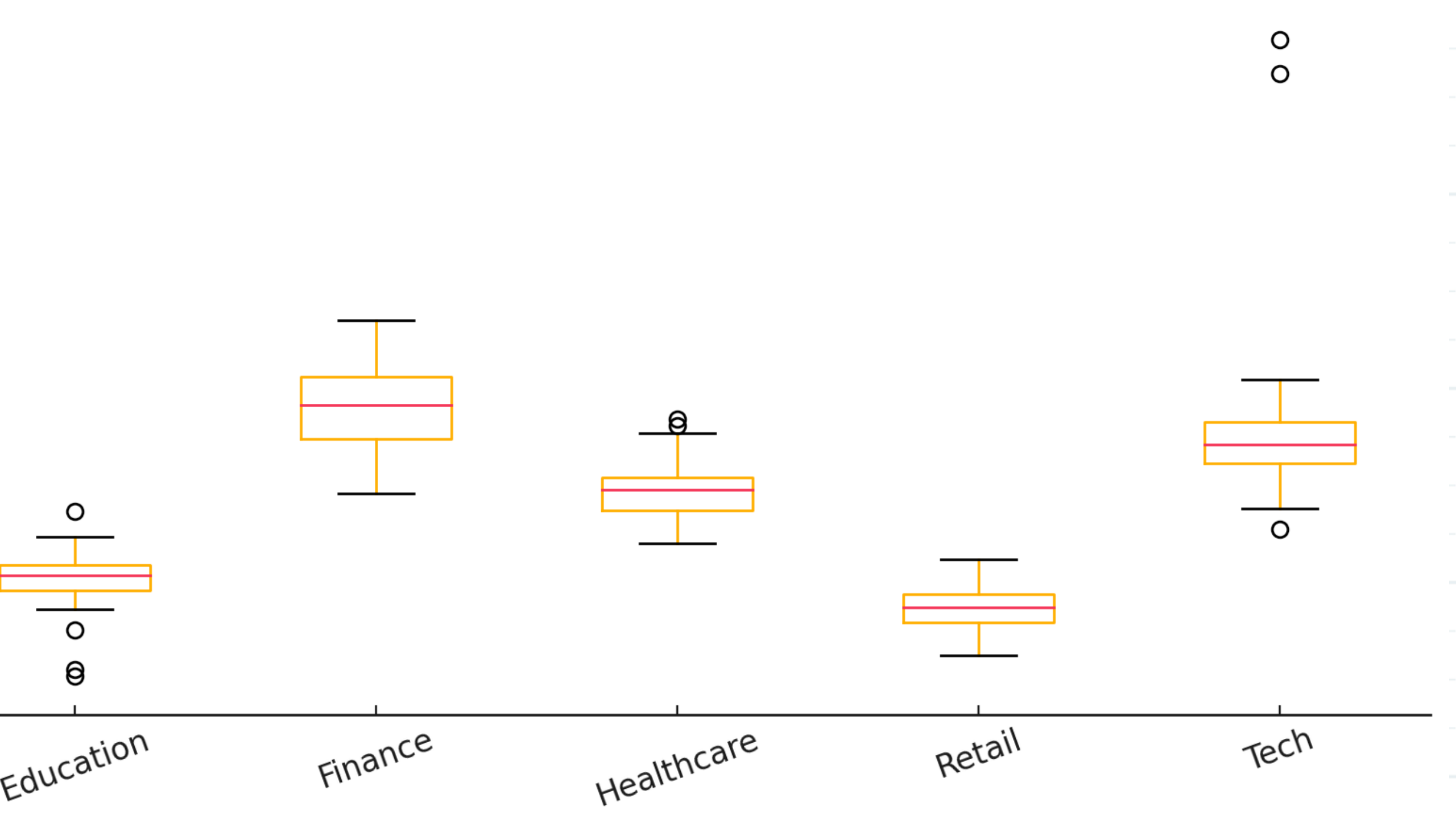


Large IQR – Wide Variation in values

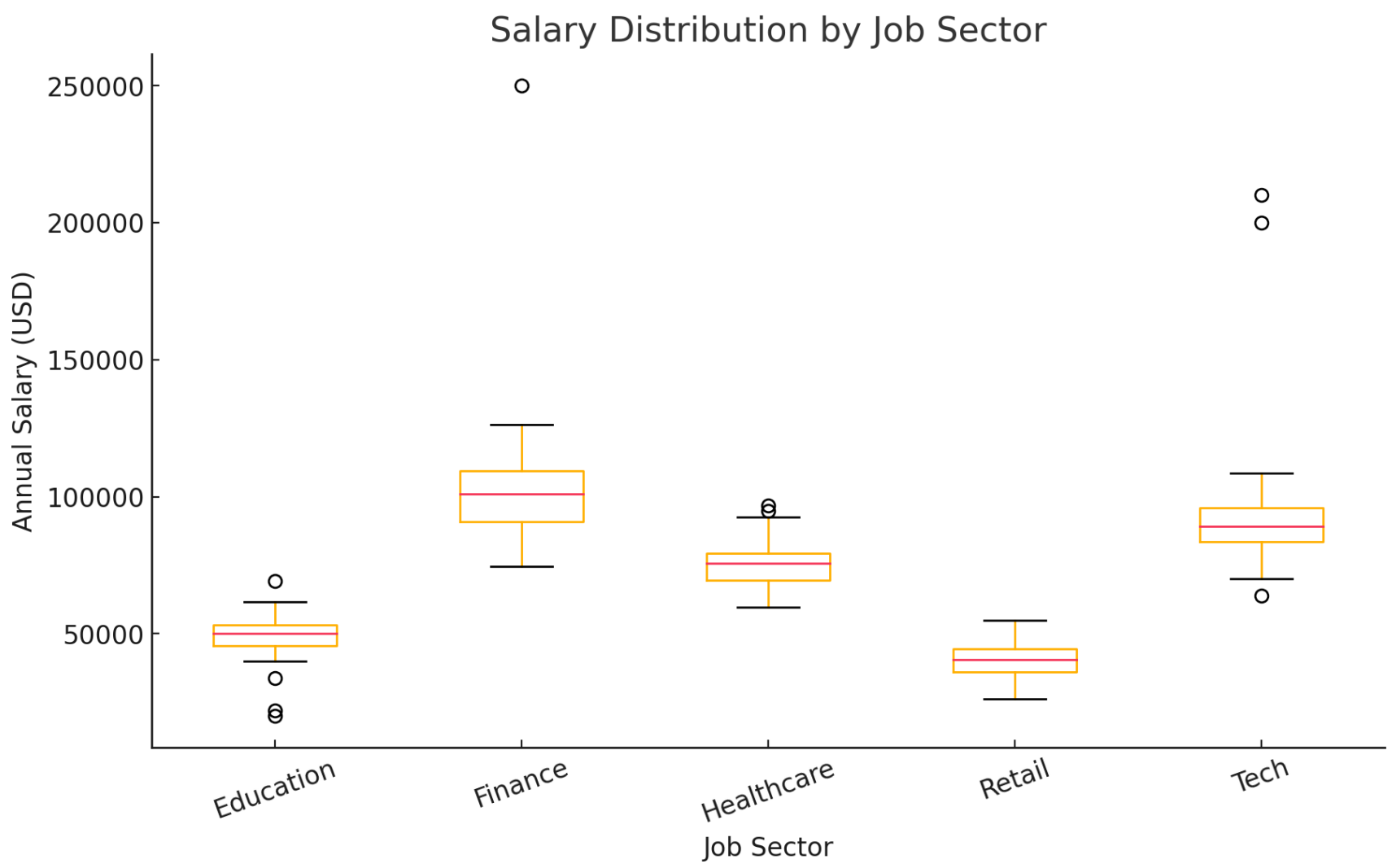
The **position of the median** within the box in a box plot provides insights into the **symmetry and skewness of the distribution.**


Annual Salary (
150000
100000
50000
Education
Finance
Healthcare
Job Sector


Finance
Healthcare
Retail
Tech
Job Sector


Education
Finance
Healthcare
Retail
Tech

Example


Salary Distribution by Job Sector
Annual Salary (USD)
250000
200000
150000
100000
50000
Education
Finance
Healthcare
Retail
Tech
Job Sector

Information needed to plot a Box Plot

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Data →

Group	0th %ile (Min)	25th %ile	50th %ile (Median)	75th %ile	100th %ile (Max)

“5-number Summary”